



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/691,312	10/23/2003	Don-Gyoun Lee	8733.904.00-US	6396
30827                      7590                      11/25/2008 MCKENNA LONG & ALDRIDGE LLP 1900 K STREET, NW WASHINGTON, DC 20006				
EXAMINER				
BODDIE, WILLIAM				
ART UNIT		PAPER NUMBER		
2629				
MAIL DATE		DELIVERY MODE		
11/25/2008		PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/691,312

**Applicant(s)**

LEE ET AL.

**Examiner**

WILLIAM L. BODDIE

**Art Unit**

2629

**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 13 August 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-14 and 16-23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-14 and 16-23 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-8508)
- Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

### **DETAILED ACTION**

1. In an amendment dated, July 18<sup>th</sup>, 2008 the Applicants amended claims 1-5, 12, 19 and 21-22. Currently claims 1-14 and 16-23 are pending.

#### ***Continued Examination Under 37 CFR 1.114***

2. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on July 18<sup>th</sup>, 2008 has been entered.

#### ***Response to Arguments***

3. Applicant's arguments filed July 18<sup>th</sup>, 2008 have been fully considered but they are not persuasive.
4. On pages 9-10 of the remarks, the Applicants argue that D'Souza does not retrieve values from a lookup table to be mixed with the received information.

The Examiner must respectfully disagree. As pointed out in the previous and current office action, D'Souza discloses multiple lookup tables. Applicants are directed to figure 2 which discloses non-linearization color look-up tables which contain the end resultant color values that compensate the displayable color.

5. Applicant's arguments, see page 11 of remarks, filed July 18<sup>th</sup>, 2008, with respect to the rejection(s) of claim(s) 12 under 103(a) have been fully considered and are

persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Beretta.

***Claim Objections***

6. Claim 1 is objected to because of the following informalities:
  - a. line 16 of the claim reads in part, "replaces the B color." There is no previous mention of a B color, therefore Applicants are requested to replace "the" with 'a'. Appropriate correction is required.
  - b. Additionally on line 16, the phrase, "with a B color value at gray scale" appears. This phrase is also grammatically incorrect. An article needs to be placed between "at" and "gray scale." Appropriate correction is required.
  - c. On line 17 of claim 1, the phrase "prior to the level." There is no previous mention of a level, therefore Applicants are requested to replace "the" with 'a'. Appropriate correction is required.
7. Claims 12 and 19 are objected to because of the following informalities: the Applicant abbreviates blue as B prior to explaining that B corresponds to blue. Appropriate correction is required.
8. Claim 12 is objected to because of the following informalities: line 5 reads in part, "during the increasing the gray scale value." This is incorrect grammatically. One method of correcting the grammar is to alter the phrase to read, 'during the increasing of the gray scale value.' Appropriate correction is required.
9. Claim 12 is objected to because of the following informalities: lines 17-18 of the claims read in part, "immediately prior to the level." It appears that the level the

Art Unit: 2629

Applicant is referring to is the gray scale level that corresponds to the previously mentioned gray scale value. This is, however, unclear. Applicant is requested to further define the level in lines 17-18 or replace it with "the gray scale value."

Appropriate correction is required.

10. Claim 22 is objected to because of the following informalities: the recent amendments make the claim entirely grammatically incorrect. Appropriate correction is required.

***Claim Rejections - 35 USC § 103***

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claims 19 and 21-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yui (US 5,677,741) in view of D'Souza et al. (US 7,046,255).

**With respect to claim 19**, Yui discloses, a method of driving a display device (6 in fig. 1), comprising:

receiving image information (1 in fig. 4) including a gray scale value corresponding to a displayable color (blue; S10 in fig. 2b) by the display device (input data in fig. 6);

determining whether the gray scale value of B color of the displayable color is greater than a predetermined reference gray scale level to begin reducing a color

reproducibility in the display device (col. 2, lines 43-45; also note the color space comparisons made by the controller in col. 4, lines 39-67);

applying the received image information to the display device upon a determination the gray scale value of B color is not greater than the predetermined reference gray scale level (col. 4, line 59 - col. 5, line 11); and

compensating a displayable color by analyzing the displayable color in the received image information (clear from figs. 6a-c2 that the displayable color has been analyzed and compensated), and replacing the B color gray scale value in the received image information with a B color value at gray scale immediately prior to the level (clipping if performed as shown in figs. 6a1-c2) to begin reducing a color reproducibility retrieved from the lookup table in response to a determination that the B color gray scale value of the displayable color in the received image information is greater than the predetermined reference gray scale level to begin reducing a color reproducibility (col. 4, line 57 – col. 5, line 11, details the operation when color reproducibility is a concern), and

retrieving at least one of an R color value and a G color value from the lookup table to be mixed with the received image information to compensate the displayable color (figs. 6a2-c2; also note col. 5, lines 5-11); and

outputting a compensated displayable color (fig. 7).

Yui does not expressly disclose that the retrieval of a R or G color value is in response to the determination that the B color value of the displayable color is greater than the reference gray scale level to begin reducing a color reproducibility.

D'Souza discloses compensating image information (input R,G,B in fig. 2) and that retrieval of a R and G color value (506 values in fig. 5; specifically note the clipped B values and corresponding R and G values) are in response to the determination that the B color value of the displayable color is greater than the reference gray scale level to begin reducing a color reproducibility (506 in fig. 5; fig. 2; note that the data for each color is supplied to all of the filters and lookup tables. Figure 5 demonstrates that all the colors are compensated based on each other's color reproducibility).

D'Souza and Yui are analogous because they are from the same field of endeavor namely, gray scale optimization within display panels.

At the time of the invention it would have been obvious to one of ordinary skill in the art to mix gray scale values of at least two colors, as taught by D'Souza in the clipped gray scale device of Yui.

The motivation for doing so would have been, to more accurately display colors, in a more cost effective way than using sRGB monitors (D'Souza; col. 2, lines 4-15).

**With respect to claim 21**, Yui and D'Souza disclose, the method of claim 19 (see above).

Yui further discloses, wherein the color is at least one of a red, green, and blue color (clear from figs. 6c1-2).

**With respect to claim 22**, Yui and D'Souza disclose, the method of claim 19 (see above).

Yui further discloses, wherein the predetermined corresponding gray scale level corresponds to a gray scale level of the displayable by the display device, wherein the

color is displayable by the display device, wherein the color is at a reduced color reproducibility (col. 4, lines 64-67).

**With respect to claim 23**, Yui and D'Souza disclose, the method of claim 19 (see above).

Yui further discloses, storing gray scale values of the 52<sup>nd</sup> to the 64<sup>th</sup> gray scale (col. 5, lines 1-5) level in the lookup table (3,9 in fig. 1).

Yui does not expressly disclose, mixing gray scale values of at least two of R, G, and B colors.

D'Souza discloses, mixing gray scale values of two colors (508 in fig. 5; specifically note the formerly solid blue (in 502) that now contains grayscale values for red in addition to the blue values, for certain blue colors.).

At the time of the invention it would have been obvious to one of ordinary skill in the art to mix gray scale values of at least two colors, as taught by D'Souza in the clipped gray scale device of Yui.

The motivation for doing so would have been, to more accurately display colors, in a more cost effective way than using sRGB monitors (D'Souza; col. 2, lines 4-15).

13. Claims 1-11 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yui (US 5,677,741) in view of D'Souza et al. (US 7,046,255) and further in view of Kimura et al. (US 6,008,786).

**With respect to claim 1**, Yui discloses, a display device (6 in fig. 1), comprising: a display panel (6 in fig. 4),

a lookup table (9 in fig. 4) to store a gray scale value (output data in figs. 6a2-c2; col. 3, lines 58-65) corresponding to a predetermined grayscale level (input data in figs. 6a2-6c2; col. 3, lines 33-58) of a first displayable color (red for example in fig. 2a);

a data processing unit (3 and 7 in fig. 4) that retrieves a grey scale value from the lookup table using input data for the first displayable color (display profile and lookup table are retrieved to determine the display color space; col. 4, lines 33-35), that determines from the retrieved gray scale value whether color reproducibility for the first displayable color is reduced (this information is compared with the host color space input data; col. 4, lines 26-33), and that based on the determination compensates the input data for the first displayable color (figs. 5a-c disclose the different determinations; col. 4, lines 39-67 disclose the compensation for each determination) and supplies gray scale data for a second displayable color to produce compensated image information (s6 in fig. 2a for example); and

a data processing unit (3 and 7 in fig. 4) that analyzes the displayable color in received image information (clear from figs. 6a-c2 that the displayable color has been analyzed and compensated), replaces the B color gray scale value in the received image information with a B color value at gray scale immediately prior to the level (clipping if performed as shown in figs. 6a1-c2) to begin reducing a color reproducibility retrieved from the lookup table in response to a determination that the B color value in the received image information is greater than a reference gray scale level to begin reducing a color reproducibility (col. 4, line 57 – col. 5, line 11, details the operation

when color reproducibility is a concern), and that outputs a compensated displayable color (fig. 7),

wherein in response to the determination that the B color value of the displayable color is greater than the reference gray scale level to begin reducing a color reproducibility, the data processing unit retrieves at least one of an R color value and a G color value from the lookup table to be mixed with the received image information to compensate the displayable color (figs. 6a2-c2; also note col. 5, lines 5-11); and

a data driving unit (5 in fig. 1) for receiving the image information and for applying the compensated image information to the display panel (col. 2, lines 45-48).

Yui does not expressly disclose that the retrieval of a R or G color value are in response to the determination that the B color value of the displayable color is greater than the reference gray scale level to begin reducing a color reproducibility.

D'Souza discloses, compensating image information (input R,G,B in fig. 2) and that retrieval of a R and G color value (506 values in fig. 5; specifically note the clipped B values and corresponding R and G values) are in response to the determination that the B color value of the displayable color is greater than the reference gray scale level to begin reducing a color reproducibility (506 in fig. 5; fig. 2; note that the data for each color is supplied to all of the filters and lookup tables. Figure 5 demonstrates that all the colors are compensated based on each other's color reproducibility).

D'Souza and Yui are analogous because they are from the same field of endeavor namely, gray scale optimization within display panels.

At the time of the invention it would have been obvious to one of ordinary skill in the art to mix gray scale values of at least two colors, as taught by D'Souza in the clipped gray scale device of Yui.

The motivation for doing so would have been, to more accurately display colors, in a more cost effective way than using sRGB monitors (D'Souza; col. 2, lines 4-15).

Neither D'Souza nor Yui expressly disclose, that the display panel is a LCD panel with the requisite control circuitry.

Kimura discloses, a liquid crystal display (LCD) panel (1 in fig. 1), the LCD panel including a plurality of gate lines (note lines off of 5 in fig. 1) and a plurality of data lines (note lines off of 3 in fig. 1) crossing the plurality of gate lines, and a plurality of red (R), green (G), and blue (B) pixels arranged in a matrix pattern (col. 1, lines 47-48);

a gate driving unit to apply scan signals to the plurality of gate lines (5 in fig. 1).

Kimura, D'Souza and Yui are analogous art because they are both from the same field of endeavor namely gray scale optimization within display panels.

At the time of the invention it would have been obvious to one of ordinary skill in the art to replace the display panel of Yui and D'Souza with the LCD panel taught by Kimura.

The motivation for doing so would have been, low power consumption and fast response (Kimura; col. 1, lines 16-20).

**With respect to claim 2**, Yui, D'Souza and Kimura disclose, the device of claim 1 (see above).

Yui further discloses, wherein the predetermined gray scale level corresponds to a gray scale level of the displayable color prior to a reduction in a reproducibility of the displayable color (clear from figs. 6a-c; also note col. 4, lines 57-67).

**With respect to claim 3**, Yui, D'Souza and Kimura disclose, the device of claim 1 (see above).

Yui further discloses, wherein the stored gray scale value is a maximum gray scale value,

wherein the maximum gray scale value is the gray scale value corresponding to the maximum gray scale level displayable by the LCD panel for which the color reproducibility of the displayable color is not reduced (clear from figs. 6a-c that the stored gray scale value (output data) is the maximum gray scale value accurately displayable by the display panel).

**With respect to claim 4**, Yui, D'Souza and Kimura disclose, the device of claim 1 (see above).

Yui further discloses, wherein the displayable color includes a blue color (clear from figs. 6c1-2).

**With respect to claim 5**, Yui, D'Souza and Kimura disclose, the device of claim 1 (see above).

Yui further discloses, wherein the displayable color is displayable at a plurality of grayscale levels (as a result of the clipping, there is clearly a displayable color that is displayable at a plurality of grayscale levels).

**With respect to claim 6**, Yui, D'Souza and Kimura disclose, the device of claim 1 (see above).

Yui further discloses, wherein the lookup table stores grayscale values of a blue color (clear from figs. 6c1-2).

**With respect to claim 7**, Yui, D'Souza and Kimura disclose, the device of claim 6 (see above).

Neither D'Souza nor Yui expressly disclose the use of 64 gray scale levels.

Kimura discloses, a lookup table that stores gray scale values each corresponding to one of 64 gray scale levels of a blue color (col. 4, lines 38-44; and col. 1, lines 52-56).

At the time of the invention it would have been obvious to one of ordinary skill in the art to replace the 256 level gray scale of Yui and D'Souza with the 64 level gray scale of Kimura for the benefit of cost.

**With respect to claims 8 and 9**, Yui, D'Souza and Kimura disclose, the device of claim 7 (see above).

While Yui discloses a 256 level gray scale instead of a 64 level gray scale, as shown above it would have been obvious to use a 64 level gray scale.

It is clear from figures 6A-2-6C-2 of Yui that once the input gray scale levels reach a certain level (based on the reproducibility of the device), that level is maintained until the maximum gray scale level.

With the conversion of Yui to a 64 level gray scale the clipped portion in figure 6 would likely begin close to a 51<sup>st</sup> gray scale level. If the color reproducibility required

that the gray scale be clipped at the 51<sup>st</sup> level then the disclosure of Yui could clearly accommodate that.

Furthermore, lacking a definite advantage of freezing grayscale values at the 51<sup>st</sup> level in the current invention, there does not appear to be any reason for specifically selecting the 51<sup>st</sup> level versus the 50<sup>th</sup> or 49<sup>th</sup> levels. This selection appears to be entirely predicated on at what level the color reproducibility begins to decrease. As Yui discloses adjusting the clipping of the gray scale based on the color reproducibility of the device, Yui is seen as sufficiently anticipating this limitation of claims 8 and 9.

**With respect to claim 10**, Yui, D'Souza and Kimura disclose, the device of claim 1 (see above).

Yui further discloses, wherein the lookup table stores gray scale values of blue, red and green colors (clear from figs. 6a2-c2).

**With respect to claim 11**, Yui, D'Souza and Kimura disclose, the device of claim 10 (see above).

Yui further discloses, storing gray scale values of the 52<sup>nd</sup> to the 64<sup>th</sup> gray scale (col. 5, lines 1-5) level in the lookup table (3,9 in fig. 1).

Neither Yui nor Kimura expressly disclose, mixing gray scale values of at least two of R, G, and B colors.

D'Souza discloses, mixing gray scale values of two colors (508 in fig. 5; specifically note the formerly solid blue (in 502) that now contains grayscale values for red in addition to the blue values, for certain blue colors.).

At the time of the invention it would have been obvious to one of ordinary skill in the art to mix gray scale values of at least two colors, as taught by D'Souza in the clipped gray scale device of Yui and Kimura.

The motivation for doing so would have been, to more accurately display colors, in a more cost effective way than using sRGB monitors (D'Souza; col. 2, lines 4-15).

**With respect to claim 20**, Yui and D'Souza disclose, the method of claim 19 (see above).

Yui further discloses, applying compensated image information to the display device (5 in fig. 4).

Neither D'Souza nor Yui expressly disclose, that the display panel comprises a plurality of data lines.

Kimura discloses, a liquid crystal display (LCD) panel (1 in fig. 1), the LCD panel including a plurality of gate lines (note lines off of 5 in fig. 1) and a plurality of data lines (note lines off of 3 in fig. 1) crossing the plurality of gate lines, and a plurality of red (R), green (G), and blue (B) pixels arranged in a matrix pattern (col. 1, lines 47-48) and applying compensated image information to the plurality of data lines (lines exiting X-driver; 3 in fig. 1).

Kimura, D'Souza and Yui are analogous art because they are both from the same field of endeavor namely gray scale optimization within display panels.

At the time of the invention it would have been obvious to one of ordinary skill in the art to replace the display panel of Yui and D'Souza with the LCD panel taught by Kimura.

The motivation for doing so would have been, low power consumption and fast response (Kimura; col. 1, lines 16-20).

14. Claims 12-14 and 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yui (US 5,677,741) in view of Beretta (US 5,416,890) and further in view of Kimura et al. (US 6,008,786).

**With respect to claim 12**, Yui discloses, a method for improving a color reproducibility (fig. 2) of a display device (6 in fig. 4), comprising:

detecting a grayscale value of B color of a red (R), green (G) and blue (B) color at which a color reproducibility of the LCD device is reduced (col. 4, lines 59-67; also see fig. 6a1-c2);

storing a correspondence of the detected gray scale value of B color and a predetermined gray scale level of a displayable color having a B color (col. 5, lines 1-5) at which a color reproducibility of the LCD device is reduced in a lookup table,

compensating a displayable color by analyzing the displayable color (clear from figs. 6a-c2 that the displayable color has been analyzed and compensated), replacing the B color value in the input video data with a B color value at gray scale immediately prior to the level (clipping if performed as shown in figs. 6a1-c2) to begin reducing a color reproducibility retrieved from the lookup table in response to a determination that the B color gray scale value of the displayable color in the received image information is greater than a reference gray scale level to begin reducing a color reproducibility (col. 4, line 57 – col. 5, line 11, details the operation when color reproducibility is a concern), and outputting a compensated displayable color (fig. 7);

applying the image information of the compensated displayable color to the display device (6 in fig. 4).

wherein the maximum gray scale value is the gray scale value corresponding to the maximum gray scale level displayable by the display panel for which the color reproducibility of the display able color is not reduced (clear from figs. 6a-c that the stored gray scale value (output data) is the maximum gray scale value accurately displayable by the display panel; also specifically note col. 4, lines 64-67).

Yui does not expressly disclose that the display device is a liquid crystal display or the manner in which the detecting step is performed.

Beretta discloses, an LCD (col. 13, lines 50-52) device increasing a gray scale value of a B color of a red (R), green (G), and blue (B) color of the LCD device (col. 23, lines 30-46) and clipping the gray scale value when the color is not within the display's gamut (specifically col. 23, lines 42-44).

Yui and Beretta are analogous art because they are both from the same field of endeavor namely color reproducibility circuitry and methods.

At the time of the invention it would have been obvious to one of ordinary skill in the art to use the method of incrementing the color, taught by Beretta, when detecting the gray scale value when color reproducibility is reduced, as taught by Yui.

The motivation for doing so would have been to ensure the color is valid and providing a simple intuitive tool to the user (Beretta; col. 23, lines 40-55).

Neither Beretta nor Yui expressly disclose, that the compensated displayable color is applied to data lines of the LCD device.

Kimura discloses, a liquid crystal display (LCD) panel (1 in fig. 1), the LCD panel including a plurality of gate lines (note lines off of 5 in fig. 1) and a plurality of data lines (note lines off of 3 in fig. 1) that are applied image information (col. 1, lines 47-48).

Kimura, Beretta and Yui are analogous art because they are both from the same field of endeavor namely gray scale optimization within display panels.

At the time of the invention it would have been obvious to one of ordinary skill in the art to replace the display panel of Yui and Beretta with the LCD panel taught by Kimura.

The motivation for doing so would have been, low power consumption and fast response (Kimura; col. 1, lines 16-20).

**With respect to claim 13**, Yui, Beretta and Kimura disclose, the device of claim 12 (see above).

Yui further discloses, wherein the predetermined gray scale level corresponds to a gray scale level of the displayable color prior to a reduction in a reproducibility of the displayable color (clear from figs. 6a-c; also note col. 4, lines 57-67).

**With respect to claim 14**, Yui, Beretta and Kimura disclose, the device of claim 12 (see above).

Yui further discloses, wherein the stored gray scale value is a maximum gray scale value (clear from figs. 6a-c that the stored gray scale value (output data) is the maximum gray scale value accurately displayable by the display panel).

**With respect to claim 16**, Yui, Beretta and Kimura disclose, the device of claim 12 (see above).

Yui further discloses, wherein the displayable color includes a blue color (clear from figs. 6c1-2).

**With respect to claims 17 and 18**, Yui, Beretta and Kimura disclose, the device of claim 12 (see above).

While Yui discloses a 256 level gray scale instead of a 64 level gray scale, as shown above it would have been obvious to use a 64 level gray scale.

It is clear from figures 6A-2-6C-2 of Yui that once the input gray scale levels reach a certain level (based on the reproducibility of the device), that level is maintained until the maximum gray scale level.

With the conversion of Yui to a 64 level gray scale the clipped portion in figure 6 would likely begin close to a 51<sup>st</sup> gray scale level. If the color reproducibility required that the gray scale be clipped at the 51<sup>st</sup> level then the disclosure of Yui could clearly accommodate that.

Furthermore, lacking a definite advantage of freezing grayscale values at the 51<sup>st</sup> level in the current invention, there does not appear to be any reason for specifically selecting the 51<sup>st</sup> level versus the 50<sup>th</sup> or 49<sup>th</sup> levels. This selection appears to be entirely predicated on at what level the color reproducibility begins to decrease. As Yui discloses adjusting the clipping of the gray scale based on the color reproducibility of the device, Yui is seen as sufficiently anticipating this limitation of claims 17 and 18.

### ***Conclusion***

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to WILLIAM L. BODDIE whose telephone number is

(571)272-0666. The examiner can normally be reached on Monday through Friday, 7:30 - 4:30 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sumati Lefkowitz can be reached on (571) 272-3638. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Sumati Lefkowitz/  
Supervisory Patent Examiner, Art Unit 2629

/W. L. B./  
Examiner, Art Unit 2629  
11/25/08